

Therapeutic Significance of Palliative Operations for Gastric Cancer for Survival and Quality of Life

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Background and Objectives: There have been few reports on the objective assessment of quality of life (QOL) in patients with gastric cancer following palliative operations. The benefit of a palliative operation for survival and QOL of patients with gastric cancer is not clear.

Methods: Survival and hospital-free survival (HFS), which is considered to be one objective indicator of QOL, were studied in 95 patients undergoing palliative operations for gastric cancer. Univariate and multivariate analyses were used to determine the clinicopathologic factors potentially related to survival of patients.

Results: In univariate analysis, palliative gastrectomy and absence of peritoneal dissemination were significantly correlated with better survival. The significance of palliative gastrectomy for survival was, therefore, evaluated for various degrees of peritoneal dissemination: P₀, no dissemination; P₁, metastasis to the adjacent peritoneum; P₂, a few scattered metastases to the distant peritoneum; and P₃, numerous metastases. Survival and achievement of HFS for 3 months or longer were higher following palliative gastrectomy than gastrojejunostomy. Among gastrectomies, however, total gastrectomy performed in patients with P₂ or P₃ showed a poorer outcome for survival and HFS than total gastrectomy performed with P₀ or P₁ and distal gastrectomy.

Conclusions: As a palliative measure, gastrojejunostomy and total gastrectomy performed with P₂ or P₃ peritoneal dissemination had no beneficial effect on the prolongation of survival or improvement of QOL of patients with gastric cancer.

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KEY WORDS: gastric cancer; palliative operation; survival; quality of life; hospital-free survival

INTRODUCTION

Palliative surgery for gastric cancer is defined either as a bypass due to an unresectable primary lesion or as a gastrectomy with an apparent residue of metastatic lesions, i.e., palliative gastrectomy. If resection of an obstructing lesion is not possible, gastrojejunostomy can be performed, although results are better following palliative resection [1,2]. We have tried to perform gastric resection even in patients with distantly spreading tumors. The aims of a palliative operation for advanced gastric cancer are (1) to enable oral food intake after

improving stenotic or obstructive symptoms, bleeding, and/or pain, and (2) to allow the patient to be discharged from the hospital and to stay at home for a certain period of time with a relatively comfortable condition. Although the need for a method of measuring the quality of life

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TABLE I. Characteristics of Patients Undergoing Palliative Operations for Gastric Cancer

Characteristics	Gastrectomy	Gastrojejunostomy	Exploration
No. of patients	64	15	16
Mean age in years (range)	64.3 (37–85)	64.6 (41–86)	59.8 (19–75)
Male:Female	44:20	14:1	10:6
Tumor stage (TNM)			
IIIB	2	0	0
IV	62	15	16
Bleeding	22	3	5
Outlet stenosis	18	12	6

(QOL) in patients undergoing therapy for cancer has been widely recognized, no adequately feasible method has yet been established [3]. Hospital-free survival (HFS), in which patients are able to spend their daily life at home or away from the hospital until the final readmission, may be related to QOL. We considered the achievement of HFS for 3 months or longer following discharge as one objective of palliative surgery for the patients in this study because the postoperative hospital stay of the patients averaged about 1 month and the median survival was 4 months in patients undergoing gastrojejunostomy. The achievement of this objective was examined in patients with gastric cancer who were subjected to palliative surgery including exploratory laparotomy. The therapeutic significance of palliative gastrectomy for postoperative survival and HFS of the patients in relation to peritoneal dissemination is also discussed.

PATIENTS AND METHODS

Of a total of 829 operations for gastric cancer carried out over a 7-year period from January 1990 to December 1996, 95 (11.5%) were palliative operations: 64 were palliative gastrectomies, 15 were gastrojejunostomies, and 16 were exploratory laparotomies. The characteristics of patients are shown in Table I. All but 2 patients who had stage IIIB disease and who underwent palliative gastrectomy had stage IV disease according to the TNM classification. Gastric bleeding which required preoperative blood transfusion and symptom of outlet stenosis were seen in a relatively large number of patients. Fifty-four patients had peritoneal dissemination; 15 had metastases to the liver and 63 had distant lymph node metastasis according to the TNM classification; and 18 had unresectable lesions that mainly involved the hepatoduodenal ligament, liver, and pancreas. A total of 64 palliative gastrectomies were performed, including 38 distal gastrectomies and 26 total gastrectomies. Peritoneal dissemination was classified according to the General Rules for Gastric Cancer Study by the Japanese Research Society for Gastric Cancer: P₀, no dissemination; P₁, disseminating metastasis to the adjacent peritoneum of the

stomach; P₂, a few scattered metastases to the distant peritoneum; and P₃, numerous metastases to the distant peritoneum. Distal gastrectomy was performed in 30 patients with P₀ or P₁ and in 8 patients (21.1%) with P₂ or P₃. Total gastrectomy was carried out in 17 patients with P₀ or P₁ and in 9 patients (34.6%) with P₂ or P₃. The majority of patients with P₀ or P₁ metastasis underwent D₁ or D₂ lymphadenectomy, and the majority of patients with P₂ or P₃ metastasis underwent D₀ or D₁ lymphadenectomy. Nine of 15 patients (60.0%) who underwent gastrojejunostomy and 7 of 16 patients (43.8%) who underwent exploratory laparotomy had P₂ or P₃ dissemination. HFS for 3 months or longer was considered to be a reasonable criterion for evaluating the overall QOL of patients with a limited life expectancy.

A univariate analysis was undertaken to identify prognostic factors related to cumulative survival. The factors studied were type of operation; depth of invasion; peritoneal dissemination; hepatic metastasis; and lymph node metastasis. Significant variables in the univariate analysis were chosen for Cox multivariate analysis and compared using the Wilcoxon rank-sum test. A univariate analysis was not performed to evaluate prognostic factors related to HFS due to difficulty in knowing the exact duration of the stay at home in some patients who finally died in another hospital.

Statistical analysis of the achievement of HFS for a period of 3 months or longer among the operative procedures was performed by the χ^2 test, and cumulative survival curves were calculated by the Kaplan-Meier methods and compared with the Wilcoxon rank-sum test $P < 0.05$ indicated statistical significance.

RESULTS

Among the 64 patients who underwent palliative gastrectomy for gastric cancer, 1 patient (1.6%) died during the hospital stay due to progressive disease. Hospital death was also encountered in 5 of 16 patients (31.3%) who underwent exploratory laparotomy and all died of progression of cancer. Five of 15 patients (33.3%) who underwent gastrojejunostomy died during the hospital stay: 1 of cerebral infarction and 4 of progressive disease. Univariate analysis showed that type of operation and peritoneal dissemination were significant factors, and multivariate analysis showed that type of operation was the only independent prognostic factor for survival (Table II).

The 1-year survival rate was 48.2% for gastrectomy, 37.5% for exploratory laparotomy, and 20.4% for gastrojejunostomy (Fig. 1). Survival was significantly better for patients who underwent palliative gastrectomy compared to those who underwent gastrojejunostomy ($P < 0.01$). Among the patients who underwent palliative gastrectomy, the 2-year survival rate was 27.7% for patients with P₀ or P₁ who underwent distal gastrectomy, 17.6%

TABLE II. Variables Affecting Survival of Patients Undergoing Palliative Operations for Gastric Cancer: Univariate Analysis*

Variables	Categorization	No. of patients (n = 95)	Median disease-free survival (months)	P
Type of operation	Gastrectomy	64	10	0.001
	Gastrojejunostomy	15	4	0.057
	Exploration	16	8	
T	Subserosa	6	17	0.370
	Serosa	89	9	
N	Regional	32	9	0.494
	Distant	63	8	
P	0, 1	62	10	0.043
	2, 3	33	7	
H	Absent	80	9	0.464
	Present	15	9	

*T = tumor invasion; N = lymph node metastasis; P = peritoneal dissemination; H = hepatic metastasis.

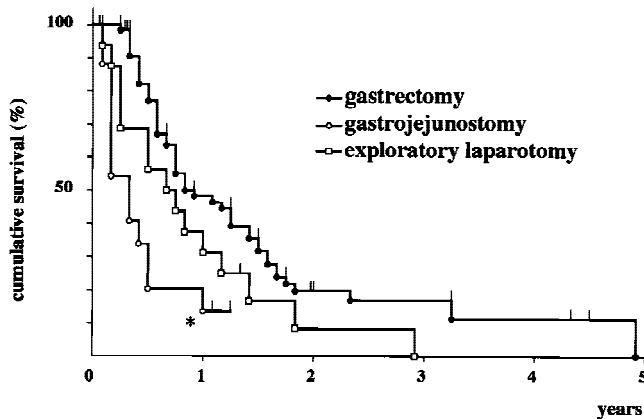


Fig. 1. Survival curves for 64 patients undergoing palliative gastrectomy, 15 patients undergoing gastrojejunostomy, and 16 patients undergoing exploratory laparotomy. * $P < 0.01$ compared to that of palliative gastrectomy.

for patients with P_0 or P_1 who underwent total gastrectomy, 16.7% for patients with P_2 or P_3 who underwent distal gastrectomy, and 0% for patients with P_2 or P_3 who underwent total gastrectomy (Fig. 2). The survival for the group of patients with P_2 or P_3 metastasis who underwent total gastrectomy was significantly more unfavorable than the survival for the other three groups of patients ($P < 0.01$ or $P < 0.05$). Patients with P_0 or P_1 who underwent distal gastrectomy did not show a better survival rate compared to those with P_2 or P_3 metastasis who underwent distal gastrectomy.

HFS for a period of 3 months or longer after discharge from the hospital was achieved in 70.5% (67/95) of gastric cancer patients [82.8% (53/64) after palliative gastrectomy, 33.3% (5/15) after gastrojejunostomy, and 56.2% (9/16) after exploratory laparotomy; Table III]. An achievement of HFS for a period of 3 months or

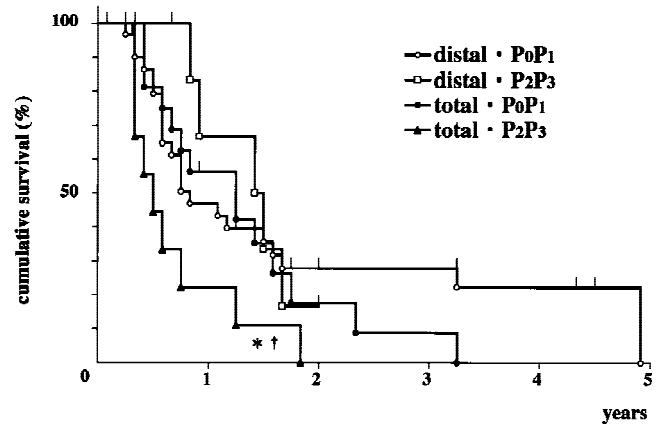


Fig. 2. Survival curves for 30 patients with P_0 or P_1 peritoneal metastasis undergoing distal gastrectomy, 8 patients with P_2 or P_3 undergoing distal gastrectomy, 17 patients with P_0 or P_1 undergoing total gastrectomy, and 9 patients with P_2 or P_3 undergoing total gastrectomy. † $P < 0.05$ compared to those with P_2 or P_3 undergoing distal gastrectomy and those with P_0 or P_1 undergoing total gastrectomy; * $P < 0.01$ compared to those with P_0 or P_1 undergoing distal gastrectomy.

TABLE III. Patients Who Achieved HFS for 3 Months or Longer After Palliative Operation for Gastric Cancer

Procedure	Total cases	Cases that obtained HFS > 3 months (%)
Gastrectomy	64	53 (82.8)
Gastrojejunostomy	15	5 (33.3)*
Exploration	16	9 (56.2)**
Total	95	67 (70.5)

* $P < 0.001$ (gastrectomy vs. gastrojejunostomy).

** $P < 0.05$ (gastrectomy vs. exploration).

longer in patients who underwent palliative gastrectomy was significantly higher than that in patients who underwent gastrojejunostomy or exploratory laparotomy ($P < 0.001$ or $P < 0.05$). A significant difference in the achievement of HFS for a period of 3 months or longer was not seen between patients who underwent exploratory laparotomy and those who underwent gastrojejunostomy. HFS for a period of 3 months or longer was less frequently achieved in patients with P_2 or P_3 who underwent total gastrectomy than in patients with P_0 or P_1 who underwent total gastrectomy ($P < 0.05$; Table IV). There was, however, no significant difference in the achievement of HFS for a period of 3 months or longer between patients with P_2 or P_3 who underwent distal gastrectomy and patients with P_0 or P_1 who underwent distal gastrectomy.

DISCUSSION

There have been few reports on the objective assessment of QOL in patients with gastrointestinal cancer following palliative operations. HFS may be related to QOL and could be used as an objective indicator for assessing

TABLE IV. Patients With Various Degrees of Peritoneal Metastasis Who Achieved HFS for 3 Months or Longer After Palliative Gastrectomy for Gastric Cancer

Gastrectomy	Peritoneal metastasis	Total cases (n = 64)	Cases that achieved HFS > 3 months (%)
Distal	P ₀ P ₁	30	27 (90.0)
	P ₂ P ₃	8	7 (87.5)
Total	P ₀ P ₁	17	15 (88.2)
	P ₂ P ₃	9	4 (44.4)*

* $P < 0.05$ (total gastrectomy with P₀ or P₁ metastasis vs. total gastrectomy with P₂ or P₃ metastasis).

the QOL in such patients [4]. In the present study, HFS for a period of 3 months or longer following postoperative discharge until the final readmission was defined as one objective of palliative surgery, because patients were able to consume essential, but not always sufficient, dietary intake without a catheter for intravenous hyperalimentation and with appropriately controlled pain at home for a certain period of time. Since most of the medical expenses in Japan are covered by governmental or private insurance, patients tend to stay in hospital for a long period after operation. A 70.5% achievement rate of HFS for 3 months or longer for patients with gastric cancer following palliative operations may be considered satisfactory. However, careful selection of patients for surgical indication should be made because of the high in-hospital death rates of 31.3% and 33% of patients who underwent exploratory laparotomy and gastrojejunostomy, respectively.

The results of univariate analysis in the present study demonstrated that type of operation and peritoneal dissemination were the significant prognostic factors related to patient survival. Gastrojejunostomy was performed in patients with a higher association of P₂ or P₃ dissemination and resulted in a higher hospital mortality, compared to palliative gastrectomy. Gastrojejunostomy should not be indicated in patients with P₂ or P₃ dissemination. Although gastrojejunostomy alleviated stenosis, postoperative oral food intake tended to be insufficient due mainly to abdominal distension caused by subsequent accumulation of ascites. In addition, hemorrhage from the bulky tumor per se was rarely controlled by gastrojejunostomy. Gastrojejunostomy showed similarly unfavorable results for survival and HFS as exploratory laparotomy. The significance of palliative gastrectomy for survival or QOL of the patients remains controversial. Crookes et al. [5] reported that the median survival was 6 months after nonoperative therapy and 12 months after surgical bypass, both of which are significantly less than the 21-month survival period after palliative resection. Maeta et al. [6] reported that, in patients with slight peritoneal dissemination (P₁), gastrectomy with D₂ or D₃ lymphadenectomy was associated with a significantly improved postoperative survival compared to that with D₁ dissec-

tion, while this was not the case in patients with moderate to severe peritoneal disseminations (P₂ or P₃). A significant increase in survival was obtained in patients with liver metastases limited to one lobe without peritoneal metastasis who underwent gastrectomy [7,8]. However, Chow et al. [9] reported that gastrectomy performed on patients with gastric cancer and liver metastases neither prolonged life nor improve the quality of survival, which was evaluated by the duration of the stay at home. It also has been reported that total gastrectomy should not be performed as a palliative procedure [10]. Based upon univariate analysis undertaken in the present study, the significance of gastrectomy for various degrees of peritoneal dissemination was examined and the results were obtained that all of the patients with P₂ or P₃ peritoneal dissemination who underwent total gastrectomy had no prolongation of postoperative survival or any improvement in QOL. In patients with P₂ or P₃ dissemination, satisfactory palliation was less frequently achieved, and total gastrectomy should not be indicated except for selected patients suffering from potentially lethal complications such as bleeding and obstruction. Distal gastrectomy was found to have a favorable effect on the survival and QOL of the patients; more than 85% of the patients achieved HFS for 3 months or longer, regardless of the degree of peritoneal dissemination. The results of the present study demonstrated that depth of invasion, hepatic metastasis, and lymph node metastasis were not independent prognostic factors related to survival. It is presumed that, since HFS is time dependent, these factors also may not influence the HFS of the patients.

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